



Jack Faucett Associates

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SGIP COST-BENEFIT ANALYSIS

AGENDA

- Introduction
- Stakeholder Analysis
- Economic Impact Assessment
 - Input-Output Models
 - IMPLAN
 - Assigning IMPLAN Sectors
 - Previous JFA Studies
- Progress to Date



INTRODUCTION

- Jack Faucett Associates (JFA) is supporting TIAX in performing a cost-benefit analysis of California's Self-Generation Incentive Program (SGIP). This effort is essential for the completion of Task 2 of the California Energy Commission's contract with TIAX. JFA's objectives under Task 2 are as follows:
 - Develop a macro-economic impact analysis methodology that will reflect the economic benefits of the SGIP
 - Identify data that need to be collected
 - Collect the necessary data
 - Prepare the data for economic impact evaluation by assigning input-output model economic sector codes to expenditure categories.
 - Construct an economic impact assessment model to perform the analysis
 - Run data through the model
 - Analyze the results of the model
 - Contribute to the preparation of a cost-benefit analysis report for the California Energy Commission



STAKEHOLDER ANALYSIS

- Stakeholder analysis facilitates institutional and policy development by accounting for and often incorporating the needs of those who have a 'stake' or an interest in the policies under consideration
- Involved extensive literature review on the subject of measuring SGIP costs and benefits
- Key study: Hoff, Thomas E. and Margolis, Robert M. *Moving Towards a More Comprehensive Framework to Evaluate Distributed Photovoltaics*, June 6, 2005
- Identified stakeholders: distributive generation investors, ratepayers, utilities, industry, and local, state, and federal government



	DG Investors	All Ratepayers	Utility	Industry	State/Local Gov.	Federal Gov
Investment						
Equipment	-			+		
Installation	-			+		
Sales Tax	-				+	
O&M Cost	-			+		
Financing	-			+		
Electric Utility Bill						
Electric Utility Bill	+	-				
Incentives						
Incentive Payments	+		-			
Program Administration			-		+	+
Tax Effects						
Tax Credits	+				-	-
Depreciation	+				-	-
Loan Interest Write-Off	+				-	-
O&M Costs	+				-	-
Utility Bill Savings	-				+	+
Tax on Tax Credits	-					+
Utility Cost Savings						
Energy			+			
Capacity			+			
T&D System			+			
Losses			+			
Technology Synergies			+	+		
Price Effects						

	Addressed in previous CEC study performed by Itron
	Suggested category by TIAx and JFA
	Additional impacts identified in literature review



	DG Investors	All Ratepayers	Utility	Industry	State/Local Gov.	Federal Gov
Environmental						
Emissions - CO2		+ For Grid Use Reduction and Natural Gas				
Emissions - Nox		+ For Natural Gas Only				
Emissions - PM						
Reduced Waste Disposal						
Water		+				
Health		+				
RECs/Green Tags	+		+			
Job Creation						
Installation			-	+	+	+
Maintenance			-	+	+	+
Reliability *						
Blackout Prevention		+	+		+	+
Emergency Utility Dispatch	+		+			
Catastrophe Recovery		+			+	+
Backup Power	+				+	+
Risk Factors						
Manage Load Uncertainty			+			
Wholesale Price Hedge			+		+	+
Retail Price Hedge	+				+	+
Retail Price Cap		+	-		+	+
National Energy Security		+			+	+
Market Transformation						
Economies of Scale						
Technology Improvements						
Tax Revenues						

	Addressed in previous CEC study performed by Itron
	Suggested category by TIAX and JFA
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ECONOMIC IMPACT ASSESSMENT

- Impacts can be Direct, Indirect and Induced
- Create a Baseline and Program Option
- Used to develop estimates of the impacts of a program's development and operation
- Useful for cost-benefit analysis by comparing with and without project conditions
- Can be estimated using input-output models
- IMPLAN – Input-Output model detailed by sector and geography
- Previous JFA studies



IMPLAN

- IMPLAN (IMpact Analysis for PLANning) input-output modeling system
- Developed by the U.S. Department of Agriculture's Forest Service. In 1993, the Minnesota IMPLAN Group, Inc. (MIG) was formed to privatize the development of IMPLAN and to spread its use among non-Forest Service users
- Specific expenditures can be allocated to a wide range of economic industries, 509 in total, in order to develop detailed estimates of economic impact, job creation, and tax revenues
- Provides results at the national, state, and county levels
- Utilizes social accounting matrices and multiplier models
- Study will include analysis by technology



ASSIGNING IMPLAN SECTORS

- SGIP expenditure categories include:
 - Self-generation equipment costs
 - Waste heat recovery costs
 - Maintenance contract costs
- Conversion to NAICS codes
- Conversion to IMPLAN sectors
 - Margins
 - Disaggregate equipment costs among producer value, transportation margins, and trade margins



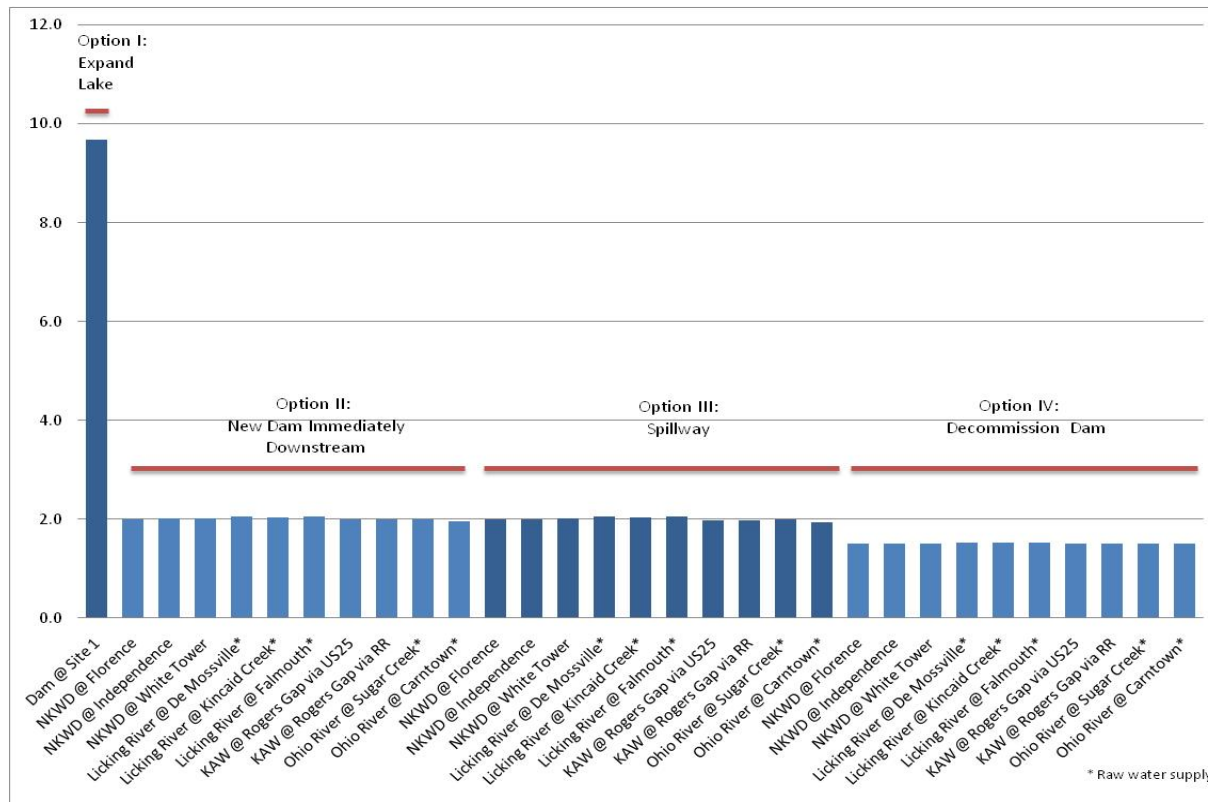
○ Example: SGIP to NAICS to IMPLAN

Item No.	Ineligible Cost Elements	NAICS CODE 2007	NAICS CODE DESCRIPTION	IMPLAN SECTOR	IMPLAN SECTOR DESCRIPTION
1	Fuel Supply Costs (digesters, gas gathering, etc.)	332420	Metal Tank (Heavy Gauge) Manufacturing	239	Metal tank, heavy gauge, manufacturing
2	Ineligible Self-Generation Equipment Cost	333611	Turbine and Turbine Generator Set Units Manufacturing	285	Turbine and turbine generator set units manufacturing
3	Electricity Storage Devices	335911	Storage Battery Manufacturing	337	Storage battery manufacturing
4	Thermal Load Costs (new absorption chillers, boilers, etc.)	332410	Power Boiler and Heat Exchanger Manufacturing	238	Power boiler and heat exchanger manufacturing
5	Interconnection Costs - Electric (work on utility side of meter)	335313	Switchgear and Switchboard Apparatus Manufacturing	335	Switchgear and switchboard apparatus manufacturing
6	Interconnection Costs - Gas (work on utility side of meter)	238220	Gas line installation, individual hookup, contractors	41	Other new construction
7	Warranty Costs (beyond SGIP requirement)	524128	Warranty insurance carriers (e.g., appliance, automobile, home owners, product)	427	Product warranty insurance carriers, direct
8	Maintenance Contract Costs (beyond SGIP requirement)	237990	Other Heavy and Civil Engineering Construction	45	Other maintenance and repair construction
9	Other Ineligible Costs (Itemize Below)				
9a	Buildings to house and/or support generation equipment	236210	Industrial Building Construction	37	Manufacturing and Industrial Buildings



PREVIOUS JFA STUDIES

- Lake Williamstown, Kentucky
- Benefit-cost ratio analysis & incremental net benefit analysis



PROGRESS TO DATE

- JFA is responsible for a series of five tasks as part of this subcontract. The five tasks are:
 - 1) Identify cost and benefit elements of the SGIP and indicate to whom the cost/benefit will accrue (e.g., utility, ratepayer, general public, federal/state government)
 - 2) Review previous studies on the costs and benefits of self generation technologies
 - 3) Identify standard “bill of goods” for each technology
 - 4) Collect data available in the literature, identify the data that TIAX should request from the CPUC (site-specific information, technology-specific information, etc.), and identify other cost inputs required to run the input-output model.
 - 5) Acquire the California state table for the IMPLAN model, run model, and perform analysis
- Tasks 1 to 3 have been completed. Tasks 4 and 5 are currently under way.

